United States
Environmental Protection Agency | Office of Water 4603 | EPA 811-F-95-004-C October 1995

EPA NATIONAL PRIMARY DRINKING WATER REGULATIONS

Contaminant Specific Fact Sheets
Volatile Organic Chemicals - Consumer Version

Acrylamide	Epichlorohydrin
Benzene	Ethylbenzene
Carbon tetrachloride	Styrene
Chlorobenzene	Tetrachloroethylene
o-Dichlorobenzene	Toluene
p-Dichlorobenzene	1,2,4-Trichlorobenzene
1,2-Dichloroethane	1,1,1-Trichloroethane
1,1-Dichloroethylene	1,1,2-Trichloroethane
cis-and trans-1,2-Dichloroethylene	
Dichloromethane	Trichloroethylene
1,2-Dichloropropane	Vinyl Chloride
Xylenes (Total)	

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National Primary Drinking Water Regulations

Acrylamide

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

DRINKING WATER STANDARDS:

MCLG: ZERO

MCL: TREATMENT TECHNIQUE

WHAT IS ACRYLAMIDE AND HOW IS IT USED?

Acrylamide is an organic solid of white, odorless, flake-like crystals. The greatest use of acrylamide is as a coagulant aid in drinking water treatment. Other uses of include: to improve production from oil wells; in making organic chemicals and dyes; in the sizing of paper and textiles; in ore processing; in the construction of dam foundations and tunnels.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

WHY IS ACRYLAMIDE BEING REGULATED?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for acrylamide has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

There are currently no acceptable means of detecting acrylamide in drinking water. In this case, EPA is requiring water suppliers to use a special treatment technique to control its amount in water. Since acrylamide is used in drinking water treatment processes, it is being controlled simply by limiting its use for this purpose.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

WHAT ARE THE HEALTH EFFECTS?

Short-term: EPA has found acrylamide to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: damage to the nervous system, weakness and incoordination in hind limbs.

Long-term: Acrylamide has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to the nervous system, paralysis; cancer.

TRADE NAMES AND SYNONYMS:

2-PROPENAMIDE
ACRYLIC AMIDE
ETHYLENECARBOXAMIDE
AMRESCO ACRYL-40
ACRYLAGEL
OPTIMUM

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	36,287	5,818
*Top Five States**		
MI	12,200	0
WA	8,000	0
CT	5,690	0
LA	4,367	500
PA	2,505	20
AL	1,262	1,258
*Major Industries**		
Plastics and resins	19,002	2,177
Pulp mills	8,000	0
Indust. organics	3,107	2,200
Indust. inorganics	2,510	500

* Water/Land totals only include facilities with releases greater 100 lbs.

HOW MUCH ACRYLAMIDE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Demand for acrylamide in the early 1990s was about 120 million pounds. The main source of concern for acrylamide in drinking water is from its use as a clarifier during water treatment. When added to water, it coagulates and traps suspended solids for easier removal. However, some acrylamide does not coagulate and remains in the water as a contaminant. Improvements in the production and use of acrylamide have made it possible to control this contamination to acceptable levels.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, acrylamide releases to land and water totalled over 40,000 lbs. These releases were primarily from plastics industries. The largest releases occurred in Michigan.

WHAT HAPPENS TO ACRYLAMIDE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Acrylamide does not bind to soil and will move into soil rapidly, but it is degraded by microbes within a few days in soil and water. Its has little tendency to accumulate in fish.

HOW WILL ACRYLAMIDE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for acrylamide became effective in 1992. EPA requires your water supplier to show that when acrylamide is added to water, the amount of uncoagulated acrylamide is less than 0.5 ppb.

HOW WILL I KNOW IF ACRYLAMIDE IS IN MY DRINKING WATER?

If the treatment technique for acrylamide fails, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

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National Primary Drinking Water Regulations

Benzene

This is a factsheet about a chemical that may be found in some communities' drinking water. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: ZERO

MCL: 5 PPB

What is Benzene and how is it used?

Benzene is a clear, colorless aromatic liquid. It is highly flammable. The greatest use of benzene is as a building block for making plastics, rubber, resins and synthetic fabrics like nylon and polyester. Other uses include: as a solvent in printing, paints, dry cleaning, etc.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Benzene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for benzene has been set at zero because EPA believes this level of protection would not cause any of the health effects described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All community water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found benzene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: temporary nervous system disorders, immune system depression, anemia.

Long-term: Benzene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: chromosome abberations, cancer.

Trade Names and Synonyms:

- Benzol 90
- Pyrobenzol
- Polystream
- Coal naphtha
- Phene

RELEASES TO WATER AND LAND: 1987 TO 1992

	Water	Land
TOTAL	564,546	1,539,385
*Top Six States**		
TX	1436	1135994
AL	199642	0
LA	137599	4347
CO	0	40793
NM	0	38199
IL	3	34110
*Major Industries**		
Petroleum refining	32,411	1,049,800
Primary Metal Ind.	133,339	18,078
Industrial chemicals	73,000	250,103
Alkalies, chlorine	122,240	0

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH BENZENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of benzene has increased: from about 9.9 billion lbs. in 1984 to over 12 billion lbs. in 1993.

Benzene is released to air primarily from fumes and exhaust connected with its use in gasoline. Other sources are fumes from its production and use in manufacturing other chemicals. In addition, there are discharges into water from industrial effluents and losses during spills.

From 1987 to 1992, according to the Toxics Release Inventory, releases of benzene to water and land totalled over 2 million lbs. These releases were primarily from petroleum refining industries, with the greatest releases occuring in Texas.

WHAT HAPPENS TO BENZENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

If benzene is released to soil, it will either evaporate very quickly or leach to groundwater. It can be broken down by some soil microbes. It may also be degraded in some ground waters. If benzene is released to surface water, most of it should evaporate within a few hours. Though it does not degrade by reacting with water, it may be degraded by microbes. It is not likely to accumulate in aquatic organisms.

HOW WILL BENZENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for benzene became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if benzene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor the benzene levels.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of benzene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing benzene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF BENZENE IS IN MY DRINKING WATER?

If the levels of benzene exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

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National Primary Drinking Water Regulations

Carbon Tetrachloride

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

DRINKING WATER STANDARDS:
MCLG: ZERO
MCL: 5 PPB

WHAT IS CARBON TETRACHLORIDE AND HOW IS IT USED?

Carbon tetrachloride is a clear heavy organic liquid with a sweet aromatic odor similar to chloroform. Most of it is used to make chlorofluorocarbon propellants and refrigerants, though this has been declining steadily. Other uses have included: as dry cleaning agent and fire extinguisher, in making nylon, as a solvent for rubber cement, soaps, insecticides, etc.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

WHY IS CARBON TETRACHLORIDE BEING REGULATED?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for carbon tetrachloride has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 part per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

TRADE NAMES AND SYNONYMS:
PERCHLOROMETHANE
METHANE TETRACHLORIDE
BENZINOFORM
UNIVERM
NECATORINA
FACSIOLIN
FLUKOIDS
R10 (REFRIGERANT)
TETRAFORM
TETRASOL
FREON 10
HALON 104

WHAT ARE THE HEALTH EFFECTS?

Short-term: EPA has found carbon tetrachloride to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: liver, kidney and lung damage.

Long-term: Carbon tetrachloride has the potential to cause

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	52,719	23,078
*Top Five States**		
TX	22,922	75
WV	4	14,443
LA	7,720	2,213
AL	8,205	0
CA	20	2,400
*Major Industries**		
Alkalies, chlorine	31,147	17,545
Inorganic chemicals	8,796	460
Petroleum refining	4,450	1,530
Misc. Indust. Organics	3,266	377
Agricultural chems.	817	2,400

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

the following effects from a lifetime exposure at levels above the MCL: liver damage; cancer.

HOW MUCH CARBON TETRACHLORIDE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of carbon tetrachloride in 1988 was 761 million lbs Carbon tetrachloride is released to land and water from landfills, in wastewater from industries, from agricultural activities.

From 1987 to 1993, according to the Toxic Release Inventory, carbon tetrachloride releases to water and land totalled nearly 76,000 lbs. These releases were primarily from chemical manufacturing industries. The largest releases occurred in Texas.

WHAT HAPPENS TO CARBON TETRACHLORIDE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Carbon tetrachloride evaporates quickly from surface waters and soil. It does not bind to soil and may leach into ground water. It has a low potential to accumulate in aquatic life.

HOW WILL CARBON TETRACHLORIDE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for carbon tetrachloride became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if carbon tetrachloride is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of carbon tetrachloride so that it is consistently below that level. The following treatment methods have been approved by EPA for removing carbon tetrachloride: Granular activated charcoal in combination with Packed tower aeration.

HOW WILL I KNOW IF CARBON TETRACHLORIDE IS IN MY DRINKING WATER?

If the levels of carbon tetrachloride exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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National Primary Drinking Water Regulations

Chlorobenzene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 0.1 ppm

MCL: 0.1 ppm

What is Chlorobenzene and how is it used?

Chlorobenzene is a colorless organic liquid with a faint, almond-like odor. The greatest use of chlorobenzene is in the manufacture of other organic chemicals, dyestuffs and insecticides. It is also a solvent for adhesives, drugs, rubber, paints and dry-cleaning, and as a fiber-swelling agent in textile processing.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Chlorobenzene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for chlorobenzene has been set at 0.1 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 0.1 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found chlorobenzene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: anesthetic effects and impaired liver and kidney function.

Long-term: Chlorobenzene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver, kidney and central nervous system damage.

Trade Names and Synonyms:

- Benzene chloride
- Chlorbenzol
- Monochlorobenzene
- Phenyl chloride
- IP Carrier T 40
- Tetrosin SP

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	326,017	36,910
*Top Five States**		
WV	262,653	263
OH	20,598	12,500
NJ	13,710	13,261
LA	16,460	265
SC	1,401	5,939
Major Industries		
Alkalis, chlorine	261,058	67
Plastics, resins	23,756	13,312
Cyclic crudes, dyes	21,657	6,637
Indus. organics	13,460	9,375
Gum, wood chems	0	4,909

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH CHLOROBENZENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of chlorobenzene in 1988 was 270 million pounds, and was expected to decrease. Major environmental releases of chlorobenzene are due to its use as a solvent in pesticides.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, chlorobenzene releases to water totalled over 326,000 lbs. Releases to land totalled nearly 37,000 lbs. These releases were primarily from alkali and chlorine industries which use chlorobenzene in chlorination processes. Most of these releases occurred in West Virginia.

WHAT HAPPENS TO CHLOROBENZENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Releases into water and onto land will either evaporate or be slowly degraded by microbes in the soil or water. Since it does not bind to soils, it can be expected to leach into the groundwater. Little accumulation is expected in fish and food products.

HOW WILL CHLOROBENZENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for chlorobenzene became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if chlorobenzene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of chlorobenzene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing chlorobenzene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF CHLOROBENZENE IS IN MY DRINKING WATER?

If the levels of chlorobenzene exceed the MCL, 0.1 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

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National Primary Drinking Water Regulations

o - Dichlorobenzene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:
- MCLG: 0.6 ppm
- MCL: 0.6 ppm

What is o-DCB and how is it used?

Ortho-dichlorobenzene, (o-DCB) is a colorless organic liquid with a pleasant, aromatic odor. The greatest use of o-dichlorobenzene is as a chemical intermediate for making agricultural chemicals, primarily herbicides. Other present and past uses include: solvent for waxes, gums, resins, wood preservatives, paints; insecticide for termites and borers; in making dyes; as a coolant, deodorizer, degreaser.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is o-DCB being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for o-DCB has been set at 0.6 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 0.6 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: o-DCB is not known to cause any health problems when people are exposed to it at levels above the MCL for relatively short periods of time.

Long-term: o-DCB has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to the nervous system, liver, kidneys and blood cells.

Trade Names and Synonyms:
- ortho-Dichlorobenzol
- Dilantin
- Dowtherm E
- Chloroben
- Dilatin DB

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	75,967	171,663
*Top Five States**		
NJ	19,602	165,661
WV	39,653	0
OR	7,260	0
SC	1,502	4,628
TX	1,418	1,000
Major Industries		
Industrial Organics	15,416	98,092
Cyclic crudes, dyes	7,639	67,418
Alkalis, chlorine	38,029	0
Paper mills	7,260	0
Gum, wood chems.	250	4,378

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH o-DCB IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of o-DCB was estimated at 43 million lbs. in 1991. Its use in manufacturing and solvents may be significant sources of discharges into water. Dichlorobenzenes also enter water systems from the use of o-DCB as a deodorant in industrial wastewater treatment. Chemical waste dump leachates and industrial wastewater are the major source of pollution of dichlorobenzenes to Lake Ontario.

From 1987 to 1993, according to the Toxic Release Inventory, o-DCB releases to land and water totalled 248 million lbs., mostly to land. These releases wer primarily form organic chemical manufacturing industries. The largest releases occurred in New Jersey.

WHAT HAPPENS TO o-DCB WHEN IT IS RELEASED TO THE ENVIRONMENT?

If released to soil, o-DCB can bind to soil particles. However, its detection in groundwater indicates that leaching can occur. It will evaporate from soil or surface water and will be broken down by microbes. o-DCB is likely to accumulate in fish and other aquatic life.

HOW WILL o-DCB BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for o-DCB became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if o-DCB is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of o-DCB so that it is consistently below that level. The following treatment methods have been approved by EPA for removing o-DCB: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF o-DCB IS IN MY DRINKING WATER?

If the levels of o-DCB exceed the MCL, 0.6 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

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For help in locating these agencies or for information on drinking water in general, call:

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National Primary Drinking Water Regulations

p-Dichlorobenzene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: - ppm/ppb

MCL: - ppm/ppb

What is p-DCB and how is it used?

Para-dichlorobenzene (p-DCB) is an organic solid of white crystals with a mothball-like odor. It is used mainly as an insecticidal fumigant against clothes moths and as a deodorant for garbage and restrooms. It is also used as an insecticide and fungicide on crops, and in the manufacture of other organic chemicals and in plastics, dyes, pharmaceuticals.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is p-DCB being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for p-DCB has been set at 75 parts per billion (ppb) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 75 ppb because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Trade Names and Synonyms:

- Paradichlorobenzene
- Paradichlorobenzol
- Paramoth
- Di-Chloricide
- Paradi
- Paradow
- Persia-Perazol
- Evola
- Parazene

What are the Health Effects?

Short-term: EPA has found p-DCB to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: nausea, vomiting, headaches, and irritation of the eyes and respiratory tract.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	33,675	4,482
*Top Five States**		
WV	27,676	0
TX	1,280	3,132
DE	1,870	200
GA	750	0
LA	503	0
Major Industries		
Alkalies, chlorine	27,676	0
Industrial org. chem.	3,076	3,350
Agricultural chem.	750	0
Cyclic crudes, interned.	600	0

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

Long-term: p-DCB has the potential to cause the following effects from a lifetime exposure at levels above the MCL: anemia, skin lesions, appetite loss, damage to liver and changes in blood.

How much p-DCB is produced and released to the Environment?

74 million lbs. of p-DCB were consumed by industry in 1986, and demand was predicted to increase. Chemical waste dump leachates and direct manufacturing effluents are reported to be the major source of p-DCB pollution in Lake Ontario.

From 1987 to 1993, according to the Toxic Release Inventory, p-DCB releases to water totalled almost 34,000 lbs. Releases to land totalled nearly 4,500 lbs. These releases were primarily from a single chemical manufacturing plant in West Virginia.

What happens to p-DCB when it is released to the environment?

p-DCB only moderately binds to soil so it may leach to ground water. Otherwise, it will evaporate and be slowly broken down by microbes. If released to water, it will largely evaporate. p-DCB is not likely to accumulate in most aquatic life, though it may in some fishes.

How will p-DCB be Detected in and Removed from My Drinking Water?

The regulation for p-DCB became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if p-DCB is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of p-DCB so that it is consistently below that level. The following treatment methods have been approved by EPA for removing p-DCB: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if p-DCB is in my Drinking Water?

If the levels of p-DCB exceed the MCL, 75 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

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EPA

National Primary Drinking Water Regulations

1,2-Dichloroethane

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:
- **MCLG:** zero
- **MCL:** 5 ppb

What is 1,2-Dichloroethane and how is it used?

1,2-Dichloroethane is a colorless, oily, organic liquid with a sweet, chloroform-like odor. The greatest use of 1,2-dichloroethane is in making chemicals involved in plastics, rubber and synthetic textile fibers. Other uses include: as a solvent for resins and fats, photography, photocopying, cosmetics, drugs; and as a fumigant for grains and orchards.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is 1,2-Dichloroethane being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,2-dichloroethane has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Trade Names and Synonyms:
- 1,2-Ethylene dichloride
- Glycol dichloride
- Freon 150
- Borer sol
- Brocide
- Destruxol borer-sol
- Dichlor-mulsion
- Dutch oil
- Granosan

What are the Health Effects?

Short-term: EPA has found 1,2-dichloroethane to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: central nervous system disorders, and adverse lung, kidney, liver circulatory and gastrointestinal effects.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	433,056	22,616
*Top Six States**		
NJ	192,700	231
LA	136,508	2,292
TX	36,459	7,028
MO	6,786	8,730
NY	11,330	0
KY	10,309	0
Major Industries		
Industrial organics	211,146	363
Alkalies, chlorine	120,283	3,254
Cyclic crudes, intermed.	32,945	119
Agricultural chemicals	11,918	8,980
Industrial gases	15,497	0
Plastics materials, resins	6,908	6,895
Photographic equip.	11,566	0
Other Chemicals	8,179	0
Pharmaceuticals	7,525	521
Petroleum refining	1,730	1,479

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

Long-term: 1,2-Dichloroethane has the potential to cause the following effects from a lifetime exposure at levels above the MCL: cancer.

How much 1,2-Dichloroethane is produced and released to the Environment?

Production of 1,2-Dichloroethane was 18 billion lbs. in 1993. It is released in waste water, spills, and/or improper disposal primarily from its use as a cleaning solvent, in making other organics, and in pesticides.

From 1987 to 1993, according to the Toxics Release Inventory, releases to water and land totalled over 455,000 lbs. These releases were primarily from facilities which make industrial organic chemicals, alkalis and chlorine. The largest releases occurred in New Jersey and Louisiana.

What happens to 1,2-Dichloroethane when it is released to the environment?

While releases to water or soil will evaporate quickly, 1,2-dichloroethane will also leach into groundwater rapidly where it is likely to persist for a very long time. There is little degradation by microbes. 1,2-Dichloroethane is not expected to accumulate in fish.

How will 1,2-Dichloroethane be Detected in and Removed from My Drinking Water?

The regulation for 1,2-dichloroethane became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,2-dichloroethane is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,2-dichloroethane so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,2-dichloroethane: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if 1,2-Dichloroethane is in my Drinking Water?

If the levels of 1,2-dichloroethane exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

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National Primary Drinking Water Regulations

1,1-Dichloroethylene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

DRINKING WATER STANDARDS:

MCLG: 7 /PPB

MCL: 7 PPB

WHAT IS 1,1-DCE AND HOW IS IT USED?

1,1-Dichloroethylene (1,1-DCE) is an organic liquid with a mild, sweet, chloroform-like odor. Virtually all of it is used in making adhesives, synthetic fibers, refrigerants, food packaging and coating resins such as the saran types.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

WHY IS 1,1-DCE BEING REGULATED?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,1-DCE has been set at 7 parts per billion (ppb) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 7 ppb because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

WHAT ARE THE HEALTH EFFECTS?

Short-term: EPA has found 1,1-DCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: liver damage.

Long-term: 1,1-DCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver and kidney damage, as well as toxicity to the developing fetus; cancer.

TRADE NAMES AND SYNONYMS:

1,1-DCE
1,1-DICHLOROETHENE
ASYM-DICHLOROETHYLENE
VINYLIDENE CHLORIDE

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	10,101	1,488
Top States:		
KY	2,880	286
TX	2,061	150
LA	2,079	3
Major Industries		
Plastics materials, resins	3,942	1,299
Alkalies, chlorine	4,173	154

HOW MUCH 1,1-DCE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

An estimated 90,700 tons/yr of 1,1-DCE were produced in the USA during the early 1980s. It may be released by evaporation or in wastewater during its production and use in the manufacture of plastic wrap, adhesives, and synthetic fiber. It may also form in groundwater that has been contaminated by similar solvents.

From 1987 to 1993, according to the Toxics Release Inventory, releases to water and land totalled over 11,500 lbs. These releases were primarily from facilities which make plastics materials/resins. The largest releases occurred in Kentucky.

WHAT HAPPENS TO 1,1-DCE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Releases to water will primarily be lost to the atmosphere through evaporation. 1,1-DCE will evaporate from soil and will leach into the groundwater where its fate is unknown, but degradation is expected to be slow. Its tendency to accumulate in aquatic life is unknown but expected to be minor.

HOW WILL 1,1-DCE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for 1,1-DCE became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,1-DCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,1-DCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,1-DCE: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF 1,1-DCE IS IN MY DRINKING WATER?

If the levels of 1,1-DCE exceed the MCL, 7 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

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National Primary Drinking Water Regulations

cis- and trans- 1,2-Dichloroethylene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

DRINKING WATER STANDARDS:

MCLG: CIS- 0.07 PPM
TRANS- 0.1 PPM

MCL: CIS- 0.07 PPM
TRANS- 0.1 PPM

WHAT ARE CIS- AND TRANS-1,2-DCE AND HOW ARE THEY USED?

1,2-Dichloroethylene (1,2-DCE) is an odorless organic liquid that has two slightly different forms, a "cis" form and a "trans" form. Both the cis and trans forms - usually as a mixture - are used as a solvent for waxes and resins; in the extraction of rubber; as a refrigerant; in the manufacture of pharmaceuticals and artificial pearls; in the extraction of oils and fats from fish and meat; and in making other organics.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

WHY ARE CIS- AND TRANS-1,2-DCE BEING REGULATED?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLGs for 1,2-DCE have been set at 0.07 parts per million (ppm) for the cis form, and 0.1 ppm for the trans form. EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCLs have also been set at 0.07 ppm for the cis form, and 0.1 ppm for the trans form. EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

WHAT ARE THE HEALTH EFFECTS?

Short-term: EPA has found cis- and trans-1,2-DCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: central nervous system depression.

Long-term: Both cis- and trans-1,2-DCE have the potential

TRADE NAMES AND SYNONYMS:
1,2-DCE
ACETYLENE DICHLORIDE

to cause liver, circulatory and nervous system damage from long-term exposure at levels above the MCL. The trans form is approximately twice as potent as the cis form in its ability to depress the central nervous system.

How much cis- and trans-1,2-DCE is produced and released to the Environment?

Releases to the environment are expected to be limited to manufacturing plants in the Gulf Region of the United States. Since cis-and trans-1,2-DCE are not listed chemicals in the Toxics Release Inventory, data on releases during manufacture and handling are not available.

Trans-1,2-dichloroethylene may be released to the environment in air emissions and wastewater during its production and use as a solvent and extractant, in organic synthesis, and in the manufacture of perfumes, lacquers, and thermoplastics.

What happens to cis- and trans-1,2-DCE when they are released to the environment?

If 1,2-dichloroethylenes are released on soil, it should evaporate and leach into the groundwater where it will break down very slowly. If released to water, they will mainly evaporate. Neither of the two forms of this contaminant are likely to accumulate in aquatic life.

How will cis- and trans-1,2-DCE be Detected in and Removed from My Drinking Water?

The regulation for cis- and trans-1,2-DCE became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if cis- and trans-1,2-DCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of cis- and trans-1,2-DCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing cis- and trans-1,2-DCE: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if cis- and trans-1,2-DCE are in my Drinking Water?

If the levels of cis- and trans-1,2-DCE exceed their MCLs, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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National Primary Drinking Water Regulations

Dichloromethane

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: ZERO

MCL: 5 PPB

What is Dichloromethane and how is it used?

Dichloromethane (DCM) is a colorless organic liquid with a sweet, chloroform-like odor. The greatest use of DCM is as a paint remover. Other uses include: solvent and cleaning agent in a variety of industries, a fumigant for strawberries and grains; and to extract substances from foodstuffs.

The list of synonyms given below may help you find out whether you are using this chemical at home or work.

Why is Dichloromethane being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for dichloromethane has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found dichloromethane to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: Damage to the nervous system and to blood.

Long-term: Dichloromethane has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver damage; cancer.

Trade Names and Synonyms:

DCM

Methylene chloride

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	1,544,694	556,830
*Top Ten States**		
CT	940,158	0
NY	58,400	155,755
GA	166,700	0
NJ	138,302	2,721
WI	0	139,920
SC	20,860	52,810
MI	39,575	32,900
KS	0	33,489
MO	0	27,295
TX	15,910	823
*Major Industries**		
Medicinals, botanicals	1,106,858	0
Photographic supplies	58,400	155,755
Misc Indust. organics	141,942	53,741
Custom plastics, resins	0	139,920
Pharmaceuticals	37,575	0
Potato/corn chips&snacks	2,000	32,900
Air conditioning/heating	0	33,489
Steel pipe, tubing	0	27,295

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH DICHLOROMETHANE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of DCM has been decreasing: from a high of 561 million lbs. in 1986, to roughly 410 million lbs. in 1993. It is released in wastewater primarily from the following industries: Paint and ink, aluminum forming, coal mining, photographic equipment and supplies, pharmaceutical, organic chemical/plastics, metal foundries and laundries. DCM is also formed during the chlorination of water.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, DCM releases to land and water totalled over 2.1 million lbs. These releases were primarily from medicinals and botanicals industries. The largest releases occurred in Connecticut and New York.

WHAT HAPPENS TO DICHLOROMETHANE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Most DCM is released to air where it is degraded by sunlight within a few months. Releases to water evaporate very quickly. It will evaporate from soil but can also leach through soil to ground water. DCM is not likely to accumulate in aquatic life.

HOW WILL DICHLOROMETHANE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for dichloromethane became effective in 1994. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if dichloromethane is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of dichloromethane so that it is consistently below that level. The following treatment methods have been approved by EPA for removing dichloromethane: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF DICHLOROMETHANE IS IN MY DRINKING WATER?

If the levels of dichloromethane exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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National Primary Drinking Water Regulations

1,2-Dichloropropane

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:
- **MCLG:** zero
- **MCL:** 5 ppm

What is 1,2-Dichloropropane and how is it used?

1,2-Dichloropropane (1,2-DCP) is a colorless organic liquid with a chloroform-like odor. The greatest use of 1,2-dichloropropane is in making other organic chemicals. It is also used in making lead-free gasoline, paper coating, soil fumigant for nematodes, and insecticide for stored grain.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is 1,2-Dichloropropane being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,2-DCP has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found 1,2-DCP to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: damage to the liver, kidneys, adrenal glands, bladder, and the gastrointestinal and respiratory tracts.

Long-term: 1,2-DCP has the potential to cause the following effects from a lifetime exposure at levels above the MCL: the liver, kidneys, bladder, gastrointestinal tract and the respi-

Trade Names and Synonyms:
- Propylene dichloride
- Nematox
- Vidden D
- Dowfume EB-5

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	98,504	5,470
Top Five States		
NY	30,000	3,205
LA	25,586	260
VA	14,629	250
TX	12,290	1,206
NJ	10,463	0
Major Industries		
Alkalies, chlorine	37,297	1,216
Photographic equip.	30,000	3,205
Gum, wood chemicals	14,629	250
Plastics, resins	10,463	0
Misc. Indust. Organics	4,793	250

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

ratory tract; cancer.

HOW MUCH 1,2-DICHLOROPROPANE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of 1,2-DCP has decreased greatly since a 1980 report of 77 million lbs. Dow Chemical, the only listed producer, discontinued its production in 1991. It may be released into the atmosphere or in wastewater during its production or use as an intermediate in chemical manufacture. There were also significant releases during its former use as a soil fumigant. It may also leach from municipal landfills.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, 1,2-dichloropropane releases to land and water totalled nearly 104,000 lbs. These releases were primarily from chemical industries. The largest releases occurred in New York.

WHAT HAPPENS TO 1,2-DICHLOROPROPANE WHEN IT IS RELEASED TO THE ENVIRONMENT?

1,2-DCP released to soil will largely evaporate. However, it has been detected in groundwater. Releases to surface water will also evaporate, and are not likely to accumulate in aquatic life.

HOW WILL 1,2-DICHLOROPROPANE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for 1,2-DCP became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,2-DCP is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,2-DCP so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,2-DCP: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF 1,2-DICHLOROPROPANE IS IN MY DRINKING WATER?

If the levels of 1,2-DCP exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 I-C October 1995

National Primary Drinking Water Regulations

Epichlorohydrin

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: ZERO.

MCL: Treatment Technique

What is Epichlorohydrin and how is it used?

Epichlorohydrin is a colorless organic liquid with a pungent, garlic-like odor. The greatest use of epichlorohydrin is used to make glycerin and as a building block in making plastics and other polymers, some of which are used in water supply systems. It is also used in the paper and drug industries and as an insect fumigant.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Epichlorohydrin being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for epichlorohydrin has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

There are currently no acceptable means of detecting epichlorohydrin in drinking water. In this case, EPA is requiring water suppliers to use a special treatment technique to control its amount in water. Since epichlorohydrin is used in drinking water treatment processes, it is being controlled simply by limiting its use for this purpose.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found epichlorohydrin to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: skin irritation; detrimental effects on liver, kidneys, central nervous system.

Long-term: Epichlorohydrin has the potential to cause the following effects from a lifetime exposure at levels above the MCL: stomach, eye and skin irritation; chromosome aberrations; adverse changes in blood; cancer.

Trade Names and Synonyms:

Chloromethyl-ethylene oxide
Chloromethyl-oxirane
Glycidyl chloride

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	42,705	22,849
Top Five States		
AL	29,385	18,476
LA	6,924	2,663
NJ	2,164	16
TX	200	1,396
AR	1,594	0
Major Industries		
Industrial organics	25,137	14,941
Plastics and resins	6,392	2,509
Industrial inorganics	4,200	1,600
Agricultural chemicals	2,207	1,532
Alkalis, chlorine	2,100	1,033

HOW MUCH EPICHLOROHYDRIN IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production and imports of epichlorohydrin in the mid-1980s totalled 511 million lbs. The main source of concern for epichlorohydrin in drinking water is from its use as a clarifier during water treatment. When added to water, it coagulates and traps suspended solids for easier removal. However, some epichlorohydrin may not coagulate and may remain in the water as a contaminant.

WHAT HAPPENS TO EPICHLOROHYDRIN WHEN IT IS RELEASED TO THE ENVIRONMENT?

Epichlorohydrin readily evaporates from near-surface soils and surface waters. It will not bind to sediments in water bodies. If spilled on land, it may leach into the groundwater but it is easily broken down by a number of chemical reactions. It will not accumulate in aquatic life.

HOW WILL EPICHLOROHYDRIN BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for epichlorohydrin became effective in 1992. EPA requires your water supplier to show that when epichlorohydrin is added to water, the amount of uncoagulated epichlorohydrin is less than 2 ppb.

HOW WILL I KNOW IF EPICHLOROHYDRIN IS IN MY DRINKING WATER?

If the treatment technique for epichlorohydrin fails, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

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United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 m-C October 1995

National Primary Drinking Water Regulations

Ethylbenzene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 0.7 ppm

MCL: 0.7 ppm

What is Ethylbenzene and how is it used?

Ethylbenzene is a colorless organic liquid with a sweet, gasoline-like odor. The greatest use - over 99 percent - of ethylbenzene is to make styrene, another organic liquid used as a building block for many plastics. It is also used as a solvent for coatings, and in making rubber and plastic wrap.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Ethylbenzene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for ethylbenzene has been set at 0.7 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has also been set at 0.7 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found ethylbenzene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: drowsiness, fatigue, headache and mild eye and respiratory irritation.

Long-term: Ethylbenzene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to the liver, kidneys, central nervous system and eyes.

Trade Names and Synonyms:

Ethylbenzol

Phenylethane

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	47,293	714,580
Top Ten States		
TX	9,870	480,164
VI	1,233	72,245
IL	31	44,789
PR	0	23,980
VA	17,997	1,950
DE	3,460	13,324
NJ	1,892	11,510
NM	0	13,076
WY	250	12,755
LA	4,383	4,552
Major Industries		
Petroleum refining	55,201	718,884
Plastics, resins	12,384	9,212
Indust. Organics	10,683	9,781
Pharmaceuticals	14,090	0
Metal containers	0	11,510

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH ETHYLBENZENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of ethylbenzene has increased: from 6.9 billion lbs. in 1982 to 11.8 billion lbs in 1993. It is released to the air primarily from its use in gasoline. More localized may be due to waste water and spills from its production and industrial use.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, ethylbenzene releases to water and land totalled over 761,000 lbs. These releases were primarily from petroleum refining industries. The largest releases occurred in Texas. The largest direct releases to water occurred in Virginia.

WHAT HAPPENS TO ETHYLBENZENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Ethylbenzene will evaporate rapidly from water, and will be degraded by microbes. It binds only moderately to aquatic sediment and to soils. Thus, it may leach to ground water if released to land. Ethylbenzene has little potential for accumulating in aquatic life.

HOW WILL ETHYLBENZENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for ethylbenzene became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if ethylbenzene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of ethylbenzene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing ethylbenzene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF ETHYLBENZENE IS IN MY DRINKING WATER?

If the levels of ethylbenzene exceed the MCL, 0.7 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 n-C October 1995

National Primary Drinking Water Regulations

Styrene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 0.1 ppm

MCL: 0.1 ppm

What is Styrene and how is it used?

Styrene is an oily organic liquid with an aromatic, almost floral odor. Initially, styrene was used primarily in the synthetic rubber industry, but it is currently used as a building block for polymers in making plastics, resins, coatings, and paints.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Styrene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for styrene has been set at 0.1 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 0.1 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found styrene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: nervous system effects such as depression, loss of concentration, weakness, fatigue and nausea.

Long-term: Styrene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver and nerve tissue damage; cancer.

Trade Names and Synonyms:

- Vinyl benzene
- Phenethylene
- Cinnamene
- Diarex HF 77
- Styrolene
- Styron
- Styropol

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	275,888	1,796,451
*Top Ten States**		
TX	160,411	572,294
WV	1,600	555,360
IN	0	124,794
WI	0	102,973
OH	0	90,358
GA	0	79,000
LA	53,430	0
FL	0	38,800
NY	32	33,192
KY	0	18,000
*Major Industries**		
Adhesives, sealants	0	537,360
Concrete products	0	398,424
Synthetic rubber	152,215	149,147
Misc. plastic products	515	201,713
Plastics and resins	25,133	71,363
Boatbuilding, repair	220	83,256
Car parts, access.	0	79,250
Misc. Indust. organics	34,275	43,290
Travel trailers, campers	0	45,129
Custom plastic resins	720	44,320

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH STYRENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of styrene was 10.7 billion lbs in 1993. It is released into the environment by emissions and effluents from its production and its use in polymer manufacture. Consumers may be exposed to styrene through contact with resin products used in fiberglass boat construction and repair, and in auto body fillers. Styrene may also leach from polystyrene containers used for food products.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, styrene releases to land and water totalled over 2 million lbs. These releases were primarily from adhesives and sealants industries. The largest releases occurred in Texas. The largest direct releases to water occurred in Louisiana.

WHAT HAPPENS TO STYRENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Styrene released to water rapidly evaporates and is degraded by microbes. It does not bind well to soils and may leach to groundwater, but its rapid break down minimizes this process. It does not tend to accumulate in aquatic life.

HOW WILL STYRENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for styrene became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if styrene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of styrene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing styrene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF STYRENE IS IN MY DRINKING WATER?

If the levels of styrene exceed the MCL, 0.1 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

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For additional information on the uses and releases of chemicals in your state, contact the:

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United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 o-C October 1995

National Primary Drinking Water Regulations

Tetrachloroethylene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: - ppm/ppb

MCL: - ppm/ppb

What is Tetrachloroethylene and how is it used?

Tetrachloroethylene (TCE) is a colorless organic liquid with a mild, chloroform-like odor. Its greatest use is in the textile industry, and as a component of aerosol dry-cleaning products.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Tetrachloroethylene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for TCE has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Trade Names and Synonyms:

- Ethylene tetrachloride
- Perchloroethylene
- PCE
- Ankilostin
- Didakene
- Fedal-un
- Nema
- Perclene
- Persec
- Tetlen
- Tetracap
- Tetraleno
- Tetropil
- Antisal 1
- Dow-per
- Perawin
- Perchlor
- Percosolv
- Perk
- Perklone
- Tetraguer
- Tetralex
- Tetravec

What are the Health Effects?

Short-term: EPA has found TCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: damage to liver, kidney, and central nervous system.

Long-term: TCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: detrimental effects to liver, kidney, and central nervous system; cancer.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	297,602	750,104
*Top Five States**		
LA	23,639	610,518
SC	104,728	0
NH	62,150	0
NC	42,192	13,102
IL	0	40,500
TX	36,144	720
OH	0	32,170
IN	1,300	27,000
CO	0	11,000
IA	5,112	0
*Major Industries**		
Alkalis, chlorine	63,472	611,242
Leather tanning,finishing	62,150	0
Cotton fabric finishing	51,577	0
Misc textile finishing	48,082	2,000
Knit outwear mills	45,808	0
Misc. apparel, access.	0	40,500
Transportation Equip.	3,750	27,000
Ammunition	0	20,575
Misc Chem. preparations	0	11,102
Petroleum refining	0	11,000
Ordance, accessories	0	10,100

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

How much Tetrachloroethylene is produced and released to the Environment?

Production of tetrachloroethylene was 405 million lbs in 1986. Major releases of tetrachloroethylene to air and water are from dry cleaning and industrial metal cleaning or finishing. Water pollution can occur from tetrachloroethylene leaching from vinyl liners in some types of pipelines used for water distribution, and during chlorination water treatment.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, tetrachloroethylene releases to land and water totalled over 1 million lbs. These releases were primarily from alkali and chlorine industries which use it to make other chemicals. The largest releases occurred in Louisiana and South Carolina.

What happens to Tetrachloroethylene when it is released to the environment?

TCE released to soil will readily evaporate or may leach slowly to the groundwater. Its break down by soil microbes is slow. TCE released to water will primarily evaporate and has little potential for accumulating in aquatic life.

How will Tetrachloroethylene be Detected in and Removed from My Drinking Water?

The regulation for TCE became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if TCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of TCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing TCE: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if Tetrachloroethylene is in my Drinking Water?

If the levels of TCE exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

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United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 p-C October 1995

National Primary Drinking Water Regulations

Toluene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 1 ppm

MCL: 1 ppm

What is Toluene and how is it used?

Toluene is an organic liquid with a sweet, benzene-like odor. The largest chemical use for toluene is to make benzene and urethane.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Toluene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for toluene has been set at 1 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has also been set at 1 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found toluene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: minor nervous system disorders such as fatigue, nausea, weakness, confusion.

Long-term: Toluene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: more pronounced nervous disorders such as spasms, tremors, impairment of speech, hearing, vision, memory, coordination; liver and kidney damage.

Trade Names and Synonyms:

Methylbenzene
Methacide
Phenylmethane
Toluol
Antisal 1A

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS* (in pounds)	732,310	3,672,041
*Top Ten States**		
TX	16,285	969,210
CA	0	930,000
CT	316,068	0
OK	0	287,000
VA	27,500	216,000
VI	2,970	191,504
IL	56	180,824
MI	0	129,226
WV	117,523	1,377
SC	6,000	89,578
*Major Industries**		
Petroleum refining	227,196	2,580,941
Medicinals, botanicals	301,585	1,108
Petroleum/coal prods.	38,856	287,000
Misc Ind. Chemicals	179,576	107,159
Gaskets, sealing devices	4,002	216,000
Wood office furniture	0	129,226
Plastics, resins	57,661	39,139
Wood home furniture	30,000	65,444
Paints, allied products	5,927	88,024

* Water/Land totals only include facilities with releases greater than 10,000 lbs.

HOW MUCH TOLUENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of toluene was 6.4 billion lbs in 1993. It is released into the atmosphere principally from the volatilization of petroleum fuels and toluene-based solvents and thinners and from motor vehicle exhaust. It is also released in wastewaters or by spills on land during the storage, transport and disposal of fuels and oils.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, toluene releases to land and water totalled over 4 million lbs., primarily from petroleum refining industries. The largest releases occurred in Texas and California. The largest releases directly to water occurred in Connecticut and West Virginia.

WHAT HAPPENS TO TOLUENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Toluene released to soil will be lost by evaporation from near-surface soil and by leaching to the groundwater. Its breakdown by soil microbes is slow. Toluene evaporates within a few hours when released to water, and it has little tendency to accumulate in aquatic life.

HOW WILL TOLUENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for toluene became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if toluene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of toluene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing toluene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF TOLUENE IS IN MY DRINKING WATER?

If the levels of toluene exceed the MCL, 1 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 q-C October 1995

National Primary Drinking Water Regulations

1,2,4-Trichlorobenzene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 0.07 ppm

MCL: 0.07 ppm

What is 1,2,4-Trichlorobenzene and how is it used?

1,2,4-Trichlorobenzene is an aromatic, colorless organic liquid. The greatest use of 1,2,4-trichlorobenzene is primarily as a dye carrier. It is also used to make herbicides and other organic chemicals; as a solvent; in wood preservatives; in abrasives. It was once used as a soil treatment for termite control.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is 1,2,4-Trichlorobenzene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,2,4-trichlorobenzene has been set at 0.07 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has also been set at 0.07 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found 1,2,4-trichlorobenzene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: changes in liver, kidneys and adrenal glands

Long-term: 1,2,4-Trichlorobenzene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: increased adrenal gland weights

Trade Names and Synonyms:

Hostetex L-PEC

Trichlorobenzol

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	157,541	22,835
*Top Five States**		
NC	80,253	13,209
VA	36,970	0
GA	17,639	8,951
WV	20,300	0
NY	1,150	1
*Major Industries**		
Finishing plants, misc	52,249	0
Finishing plants, synth.	47,976	0
Weaving, finishing mills	20,139	8,951
Alkalies, chlorine	21,773	1
Knitting mills, misc	9,077	9,994
Knit outerwear mills	1,300	3,200

* Water/Land totals only include facilities with releases greater than 100 lbs.

HOW MUCH 1,2,4-TRICHLOROBENZENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Current production figures on 1,2,4-trichlorobenzene are not available. EPA estimated 1983 production to be in the range of 3 to 8 million lbs., with imports over 3 million lbs. Major environmental releases of 1,2,4-trichlorobenzene are due to its manufacture and use as a dye carrier.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, 1,2,4-trichlorobenzene releases to land and water totalled over 180,000 lbs. These releases were primarily from textile finishing industries. The largest releases occurred in North Carolina and Virginia.

WHAT HAPPENS TO 1,2,4-TRICHLOROBENZENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

1,2,4-Trichlorobenzene (1,2,4-TCB) binds well to the soil and therefore will not leach appreciably to the groundwater when released to land. However, 1,2,4-TCB has been detected in some groundwater samples which indicates that it can be transported there by some process. If released to water it will largely evaporate within a few hours. It has some potential to accumulate in fish.

HOW WILL 1,2,4-TRICHLOROBENZENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for 1,2,4-trichlorobenzene became effective in 1994. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,2,4-trichlorobenzene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,2,4-trichlorobenzene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,2,4-trichlorobenzene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF 1,2,4-TRICHLOROBENZENE IS IN MY DRINKING WATER?

If the levels of 1,2,4-trichlorobenzene exceed the MCL, 0.07 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

United States Environmental Protection Agency
Office of Water 4601
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National Primary Drinking Water Regulations

1,1,1-Trichloroethane

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 0.2 ppm

MCL: 0.2 ppm

What is 1,1,1-Trichloroethane and how is it used?

1,1,1-Trichloroethane (1,1,1-TCE) is an organic liquid with a chloroform-like odor. It is largely used as a solvent removing grease from machined metal products, in textile processing and dyeing and in aerosols.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is 1,1,1-Trichloroethane being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,1,1-TCE has been set at 0.2 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 0.2 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Trade Names and Synonyms:

- Chloroethene
- Methylchloroform
- Aerothene TT
- Algylen
- Alpha-T
- Chlorten
- Gemalgene
- Genklene
- Dowclene
- Solvent 111
- Trichloran
- Inhibisol

What are the Health Effects?

Short-term: EPA has found 1,1,1-TCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: damage to the liver, nervous system and circulatory system.

Long-term: 1,1,1-TCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver, nervous system and circulatory system damage.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounc	22,403	812,873
*Top Six States**		
CA	0	109,070
GA	0	73,258
AR	0	67,000
IN	15,000	46,096
VA	0	51,822
UT	40,000	0
In:		
Major Industries		
Gray iron foundries	1,084	76,158
Aircraft	546	73,258
Manufacturing industries	1,018	72,572
Wood furniture	0	53,038
Fabricated structural metal	0	51,425
Plating, polishing	6,152	41,647
Turbines, generators	40,317	966

* State totals only include facilities with releases greater than 10,000 lbs.

HOW MUCH 1,1,1-TRICHLOROETHANE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Demand for 1,1,1-trichloroethane was 705 million lbs. in 1989. 1,1,1-TCE is likely to enter the environment by evaporation or in wastewater from its production or use in metal cleaning. It can also enter the environment in leachates and volatile emissions from landfills.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, releases to water and land totalled over 1 million lbs. These releases were primarily from metal fabrication industries. The largest releases occurred in California and Georgia. The largest direct releases to water occurred in Utah and Indiana.

WHAT HAPPENS TO 1,1,1-TRICHLOROETHANE WHEN IT IS RELEASED TO THE ENVIRONMENT?

1,1,1-TCE will evaporate rapidly from water and soil. It does not bind to soils nor is it broken down by microbial action, so it may leach to ground water. It has little tendency to accumulate in aquatic life.

HOW WILL 1,1,1-TRICHLOROETHANE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for 1,1,1-TCE became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,1,1-TCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,1,1-TCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,1,1-TCE: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF 1,1,1-TRICHLOROETHANE IS IN MY DRINKING WATER?

If the levels of 1,1,1-TCE exceed the MCL, 0.2 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

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National Primary Drinking Water Regulations

1,1,2-Trichloroethane

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: 3 ppb

MCL: 5 ppb

What is 1,1,2-Trichloroethane and how is it used?

1,1,2-Trichloroethane (1,1,2-TCE) is an organic liquid with a chloroform-like odor. It is only used to make vinylidene chloride which is in turn used to make synthetic fibers and plastic wraps such as the saran wrap.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is 1,1,2-Trichloroethane being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,1,2-TCE has been set at 3 parts per billion (ppb) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 ppb because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found 1,1,2-TCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: irritation of gastrointestinal tract; red or hemorrhaged lungs; pale liver.

Long-term: 1,1,2-TCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to liver and kidneys; cancer.

Trade Names and Synonyms:

- Beta trichloroethane
- Beta-T
- Vinyl trichloride.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	30,326	756
*Top Five States**		
LA	14,481	332
TX	9,699	294
NY	4,570	130
MD	750	0
KY	447	0
*Major Industries**		
Alkalies, chlorine	21,783	361
Photograph equipment	4,570	130
Meat packing plants	981	0
Petroleum refining	959	0
Blast furnaces, steelworks	750	0

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

How much 1,1,2-Trichloroethane is produced and released to the Environment?

An estimated 124 million lbs. of 1,1,2-TCE was produced in the US during 1974, based on the manufacture of vinylidene chloride. It evaporates during its use in the manufacture of vinylidene chloride and as a solvent. It is also released in wastewater from these uses, and in leachates and volatile emissions from landfills. The EPA estimates the gross annual discharge of 1,1,2-TCE waste in the US to be 4 million lbs.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, 1,1,2-TCE releases to land and water totalled over 30,000 lbs., of which about 98 percent was to water. These releases were primarily from alkali and chlorine industries. The largest releases occurred in Louisiana and Texas.

What happens to 1,1,2-Trichloroethane when it is released to the environment?

When released into water, 1,1,2-TCE should primarily evaporate. In soils, it should partially evaporate and partially leach into the groundwater. Its break down by microbes, if it occurs, is very slow. 1,1,2-TCE shows little tendency to accumulate in aquatic life.

How will 1,1,2-Trichloroethane be Detected in and Removed from My Drinking Water?

The regulation for 1,1,2-TCE became effective in 1994. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,1,2-TCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,1,2-TCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,1,2-TCE: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if 1,1,2-Trichloroethane is in my Drinking Water?

If the levels of 1,1,2-TCE exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

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For help in locating these agencies or for information on drinking water in general, call:

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For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 t-C October 1995

National Primary Drinking Water Regulations

Trichloroethylene

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:

MCLG: ZERO

MCL: 5 PPB

What is Trichloroethylene and how is it used?

Trichloroethylene is a colorless or blue organic liquid with a chloroform-like odor. The greatest use of trichloroethylene is to remove grease from fabricated metal parts and some textiles.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why is Trichloroethylene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for trichloroethylene has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Trade Names and Synonyms:

1,1,2-Trichloro ethylene
Acetylene tri-chloroethylene
Algylen
Anameth
Benzinol
Chlorilen
CirCosolv
Germalgene
Lethurin
Perm-a-chlor
Petzinol
Philex
TRI-Plus M
Vitran

What are the Health Effects?

Short-term: EPA has found trichloroethylene to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: vomiting and abdominal pain.

Long-term: Trichloroethylene has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver damage; cancer.

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	100,293	191,088
*Top Six States**		
PA	0	33,450
IL	0	30,711
GA	3,742	17,532
TX	0	21,000
MA	0	19,920
WV	12,822	0
Major Industries		
Steel pipe, tubes	31	39,288
Misc. Indust. Organics	27,708	0
Car parts, access.	4,405	19,920
Plating, polishing	3,342	20,100
Wool fabric mills	3,942	18,081

* State totals only include facilities with releases greater than 10,000 lbs.

HOW MUCH TRICHLOROETHYLENE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of trichloroethylene has increased from just over 260,000 lbs. in 1981 to 320 million lbs. in 1991. Major environmental releases of trichloroethylene are due to air emissions from metal degreasing plants. Wastewater from metal finishing, paint and ink formulation, electrical/electronic components, and rubber processing industries also may contain trichloroethylene.

From 1987 to 1993, according to the Toxics Release Inventory, trichloroethylene releases to water and land totalled over 291,000 lbs. These releases were primarily from steel pipe and tube manufacturing industries. The largest releases occurred in Pennsylvania and Illinois. The largest direct releases to water occurred in West Virginia.

WHAT HAPPENS TO TRICHLOROETHYLENE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Trichloroethylene released to soil will either evaporate or leach into ground water. If released to water, it will also quickly evaporate. It has only a moderate potential to accumulate in aquatic life.

HOW WILL TRICHLOROETHYLENE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for trichloroethylene became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if trichloroethylene is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of trichloroethylene so that it is consistently below that level. The following treatment methods have been approved by EPA for removing trichloroethylene: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF TRICHLOROETHYLENE IS IN MY DRINKING WATER?

If the levels of trichloroethylene exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.

United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-004 u-C October 1995

National Primary Drinking Water Regulations

Vinyl Chloride

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

DRINKING WATER STANDARDS:

MCLG: - PPM/PPB

MCL: - PPM/PPB

WHAT IS VINYL CHLORIDE AND HOW IS IT USED?

Vinyl chloride is a colorless organic gas with a sweet odor. It is used in the manufacture of numerous products in building and construction, automotive industry, electrical wire insulation and cables, piping, industrial and household equipment, medical supplies, and is depended upon heavily by the rubber, paper, and glass industries.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

WHY IS VINYL CHLORIDE BEING REGULATED?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for vinyl chloride has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 2 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

TRADE NAMES AND SYNONYMS:

CHLORETHENE
CHLORETHYLENE
MONOCHLOROETHENE
MONOVINYL CHLORIDE (MVC)
TROVIDUR

WHAT ARE THE HEALTH EFFECTS?

Short-term: EPA has found vinyl chloride to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: damage to the nervous system.

Long-term: Vinyl chloride has the potential to cause the following effects from a lifetime exposure at levels above the

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (pounds)	21,693	17,038
Top Five States		
LA	12,600	0
DE	86	8,829
OH	3,360	0
PA	0	3,290
SC	0	3,100
Major Industries		
Plastics, resins	19,489	13,375

MCL: damage to the liver and nervous system; cancer.

HOW MUCH VINYL CHLORIDE IS PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of vinyl chloride in 1993 was nearly 14 billion lbs. Its major release to the environment will be as emissions and wastewater at polyvinyl chloride (PVC) plastics production and manufacturing facilities. Small quantities of vinyl chloride can be released to food since it is used to make many food wrappings and containers.

From 1987 to 1993, according to EPA's Toxic Release Inventory, vinyl chloride releases to water and land totalled over 38,000 lbs. These releases were primarily from plastics materials and resins industries. The largest releases occurred in Louisiana and Delaware.

WHAT HAPPENS TO VINYL CHLORIDE WHEN IT IS RELEASED TO THE ENVIRONMENT?

Vinyl chloride released to soil will either quickly evaporate, be broken down by microbes or may leach to the groundwater. It also rapidly evaporates from water, but does not degrade there. It will not accumulate in aquatic life.

HOW WILL VINYL CHLORIDE BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for vinyl chloride became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if vinyl chloride is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of vinyl chloride so that it is consistently below that level. The following treatment methods have been approved by EPA for removing vinyl chloride: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF VINYL CHLORIDE IS IN MY DRINKING WATER?

If the levels of vinyl chloride exceed the MCL, 2 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

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National Primary Drinking Water Regulations

Xylenes

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

Drinking Water Standards:
- MCLG: 10 ppm
- MCL: 10 ppm

What are Xylenes and how are they used?

A xylene is any of a group of very similar organic compounds. They are clear liquids with a sweet odor. The greatest use of xylenes is as a solvent which is much safer than benzene. Other uses include: in gasoline as part of the BTX component (benzene-toluene-xylene); Xylene mixtures are used to make phthalate plasticizers, polyester fiber, film and fabricated items.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Why are Xylenes being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for xylenes has been set at 10 parts per million (ppm) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 10 ppm because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found xylenes to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: disturbances of cognitive abilities, balance, and coordination.

Long-term: Xylenes has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to the central nervous system, liver and kidneys.

Trade Names and Synonyms:
- Dimethyl benzene
- Xylol
- Methyltoluene
- Violet 3

RELEASES TO WATER AND LAND: 1987 TO 1993

	Water	Land
TOTALS (in pounds)	875,943	3,897,738
*Top Ten States**		
TX	30,853	2,099,734
NJ	294,437	280,759
IL	36	206,990
IN	0	145,079
AL	34,361	59,022
CA	0	91,500
MI	0	86,774
GA	68,310	15,000
VA	50,100	33,000
WA	27,860	52,360
*Major Industries**		
Petroleum refining	131,817	2,678,958
Metal barrels, drums	5	289,542
Textile finishing, misc.	278,454	0
Misc. Industrial chems.	95,706	69,696
Extruded Aluminum prod.	1,265	138,798
Furniture, fixtures	0	91,500
Cotton fabric finishing	68,310	15,000
Wood office furniture	0	67,677
Pharmaceuticals	52,285	3,100
Paper mills	52,480	2,122

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

HOW MUCH XYLENES ARE PRODUCED AND RELEASED TO THE ENVIRONMENT?

Production of xylenes was 6.84 billion lbs. in 1993. Major environmental releases of xylenes are due to evaporation from the refining and use of petroleum products. It may also be released by leaks or spills during the transport and storage of gasoline and other fuels. Xylenes are a natural products of many plants, and are a component of petroleum and coal tar.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, xylene releases to land and water totalled nearly 4.8 billion lbs. These releases were primarily from petroleum refining industries. The largest releases occurred in Texas. The largest direct releases to water occurred in New Jersey and Georgia.

WHAT HAPPENS TO XYLENES WHEN RELEASED TO THE ENVIRONMENT?

Most of the xylenes are released into the atmosphere where they are quickly degraded by sunlight. When released to soil or water, xylenes will quickly evaporate. They may leach into ground water and persist there for several years. There is little potential for accumulation in aquatic life.

HOW WILL XYLENES BE DETECTED IN AND REMOVED FROM MY DRINKING WATER?

The regulation for xylenes became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if xylenes is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of xylenes so that it is consistently below that level. The following treatment methods have been approved by EPA for removing xylenes: Granular activated charcoal in combination with Packed Tower Aeration.

HOW WILL I KNOW IF XYLENES ARE IN MY DRINKING WATER?

If the levels of xylenes exceed the MCL, 10 ppm, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone book's government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call:

EPA's Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the:

Community Right-to-Know Hotline: (800) 535-0202.